ELECTROLIFE

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Université de Lille · stargate hydrogen · Pietro Fiorentini · HYTER New Energy Routes

Consiglio Nazionale delle Ricerche · 1s1 Energy · LOCCIONI · volytica diagnostics

SolydEra · Clean Hydrogen Partnership · Co-funded by the European Union

FACTS & FIGURES

START DATE	END DATE
1/1/2024	31/12/2028

DURATION

60 MONTHS

BUDGET	GA NUMBER
€ 9.995.705	101137802

CONTACT

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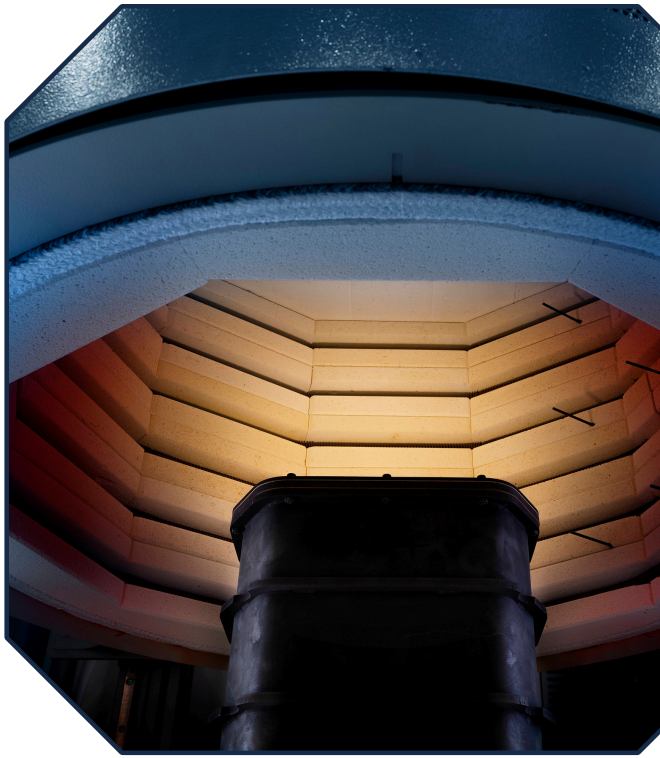
Enhance durability of electrolyser technologies

ELECTROLIFE



About ELECTROLIFE

The ELECTROLIFE project aims to be a booster to enable the use of green hydrogen technologies to support decarbonization of European global industry. Currently, electrolysis technologies suffer from limitations in terms of cost, efficiency, stability, scalability, and recyclability. This is mainly due to the lack of understanding and identification of electrolyzer degradation mechanisms and improvement of current cell performance. In the next 5 years, ELECTROLIFE aims to increase the efficiency performance of electrolyzers by reducing the use of critical materials and extending the useful life of these systems. These goals will be achieved through test campaigns to identify multiple degradation mechanisms on multiple scales, multiphysics simulations with superimposed degradation mechanisms, prototyping of cells and stack components, and construction of dedicated test benches.

The CONCEPT

The ELECTROLIFE concept and architecture is unique because focus its research activities on all the 5 today classified electrolysis technologies (AEL, PEMEL, AEMEL, SOEL, PCCEL), in order to approach with the same structured methodology all the paths to understanding and modeling the degradation mechanisms of different electrochemical systems, to develop and assess improved electrochemical cells and stacks (especially under dynamic use and operational stress) and to validate technologies and diagnostic tools (SoH).

The ELECTROLIFE concept consist of 8 keystones (KS):

- KS1: Identification and comprehension of degradation phenomena that affect the 5 technologies involved
- KS2: Development of degradation and lifetime prediction models
- KS3: Development of testing procedures for degradation assessment
- KS4: Development of ad-hoc testing and diagnostic tools
- KS5: Technologies development and optimization
- KS6: Execution of test campaigns on the 5 electrolysis technologies
- KS7: Validation of the degradation models and diagnostic tools
- KS8: Guidelines for next generation robust stacks, diagnostic tools and optimized strategies of operation, for electrolysers lifetime extension